

ABSTRACT OF THE DISCLOSURE

A method of measuring the thickness of an insulator film formed on one surface of a semiconductor substrate, in a non-contact manner with respect to the insulator film. This method includes: (i) a charging processing step of charging the insulator film surface in a non-contact manner; (ii) a charge amount measuring step including: a step of obtaining a first flat band voltage by conducting, prior to the charging processing step, a C-V measurement on the semiconductor substrate in a non-contact manner with respect to the insulator film; a step of obtaining a second flat band voltage by conducting, after the charging processing step, a C-V measurement on the semiconductor substrate in a non-contact manner with respect to the insulator film; and a step of calculating, based on a difference between the first and second flat band voltages, the charge amount given to the insulator film surface by the charging processing step; (iii) a surface potential measuring step of measuring, after the charging processing step, the insulator film surface potential in a non-contact manner with respect to the insulator film; and (iv) a step of calculating the insulator film thickness based on the charge amount measured at the charge amount measuring step and on the surface potential measured at the surface potential measuring step.